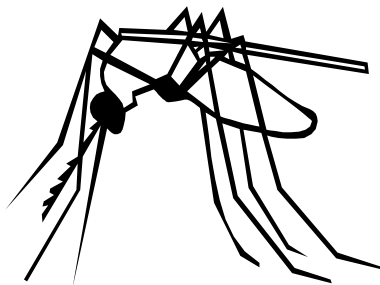


**Massachusetts Department of Public Health
Bureau of Communicable Disease Control
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Cover photo: Centers for Disease Control and Prevention (CDC)

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Preventing Disease Spread By Mosquitoes



Culex mosquito laying a raft of eggs.

**Massachusetts Department of Public Health
Division of Epidemiology and Immunization**

April 2003

What diseases can mosquitoes spread?

In Massachusetts, some mosquitoes can transmit **eastern equine encephalitis virus (EEE)** and **West Nile virus (WNV)**.

Eastern equine encephalitis (EEE) is a rare but serious viral disease. Typical symptoms include high fever, stiff neck, headache, and lack of energy. Inflammation and swelling of the brain, called encephalitis, is the most dangerous result. Fewer than 80 cases have been reported in Massachusetts since 1938, with most occurring in the southeastern part of the state.

West Nile virus (WNV) was first identified in the United States in 1999. Most WNV infections do not cause any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. In a small percentage of people infected by the virus, the disease can be serious, even fatal. More severe infections can cause headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis, and, sometimes, death. Persons older than 50 years of age have a higher risk of developing severe illness.

The best way to prevent both of these illnesses is by avoiding mosquito bites. Only a small proportion of mosquitoes are infected at any given time. Thus, being bitten by a mosquito does not mean a person will become sick.

Where can I get more information?

For further information on EEE and WNV:

Massachusetts Department of Public Health (MDPH)
Division of Epidemiology and Immunization
(617) 983-6800 or toll-free at (888) 658-2850
<http://www.state.ma.us/dph/>

For more detailed information on repellents and insecticides:

Massachusetts Department of Public Health
Bureau of Environmental Health Assessment
(617) 624-5757

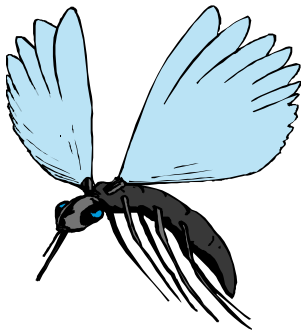
Environmental Protection Agency
<http://www.epa.gov/>

For information on pesticide use:

Massachusetts Department of Food and Agriculture
Massachusetts Pesticide Bureau
(617) 626-1777

What should I do if I have a reaction to a repellent?

If you suspect that you or your child is having an adverse reaction to a repellent, wash the treated area, remove treated clothing, and call the Massachusetts Poison Control Center toll-free at (800) 222-1222. If you go to the doctor, take the repellent with you; the label information may be useful to your physician.



What is the best way to avoid mosquito bites?

The following personal protection measures are effective in reducing contact with mosquitoes:

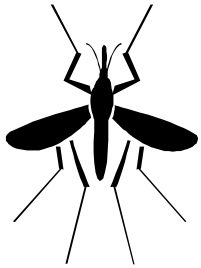
- Wear long-sleeved shirts and long pants.
- Stay indoors at dawn and dusk when mosquitoes are most active.
- Use mosquito netting on baby carriages or playpens when your baby is outdoors.
- Make sure screens are repaired and that screens are tightly attached to doors and windows.
- Remove standing water from ditches, gutters, old tires, wheelbarrows, and wading pools. Mosquitoes that bite people can begin to grow in any puddle or standing water that lasts for more than four days, so avoid letting water collect around your home.
- Avoid camping overnight near freshwater swamps to reduce your risk of exposure to mosquitoes that carry EEE. If you do go camping, use a tent with mosquito netting and use appropriate repellents.
- Use mosquito repellents, making sure to follow directions on the label.



What precautions should I take with repellents?

The two most common active ingredients in repellents are **DEET** (N-N-diethyl-meta-toluamide) and **permethrin**. These products will remain effective for many hours after application, so it is not necessary to frequently reapply them.

Repellents containing DEET can be applied to exposed skin and clothing. Some DEET products may damage certain fabrics. Always read the label before applying. DEET is effective in

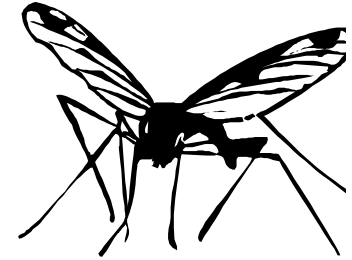


repelling mosquitoes and other insects when used according to the manufacturer's recommendations. Since DEET can be absorbed through the skin, and in rare cases causes illness, do not apply too much, do not apply to broken skin, and do not apply to skin that will be covered by clothing. Avoid applying in closed spaces,

like cars or tents. When using repellents on young children, do not apply to their hands or faces, as children often rub their eyes and faces and put their fingers in their mouths.

DEET products should not be used on infants. Products with DEET concentrations above 10-15% should be avoided in children, and products with DEET concentrations above 30-35% should be avoided in adults. Higher concentrations of DEET may provide protection for a longer period of time, but they do not provide better protection. If you are concerned about exposures

to chemicals, use the lowest concentration of DEET that provides protection for the length of time you will be exposed to mosquitoes. After returning indoors, wash treated areas with soap and water, and launder treated clothing before reuse.



Permethrin-containing products are insecticides that kill mosquitoes and other insects on contact. Permethrin products are not designed to be applied to the skin.

Clothing should be treated and allowed to dry in a well-ventilated area prior to wearing. Because permethrin binds very tightly to fabrics, once the fabric is dry, very little of the permethrin gets onto the skin.

Do “natural” repellents work?

A number of plant-derived products are available for use as repellents. Limited information is available regarding the short and long term health effects and overall effectiveness of these products. The information that is available indicates that these products do not provide the same level or duration of protection as products containing DEET or permethrin.